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(54) Multi-function stalk switch

(57) A multi-function stalk switch that incorporates a pushbutton switch, a first rotary switch and a second rotary switch onto the end of a stalk, wherein further switching functions may be executed by moving the entire stalk in either of two orthogonal planes. The stalk switch incorporates many design features that enable it to be assembled at low cost from a small number of parts. One such feature is the use of plastic-on-plastic detents to control positioning of the rotary switches so that they wipe across predetermined portions of a flexible printed circuit board. Another feature is the inclusion of a springloaded plunger detent riding in a concave centering mechanism that is operable to automatically return the stalk switch to its central (neutral) position after removal of external biasing forces. A further feature is the inclusion of magnets on the stalk switch and Hall effect sensors fixedly mounted nearby in order to sense movement of the magnets (and therefore the stalk) in two orthogonal planes. Further features of the invention are also disclosed.

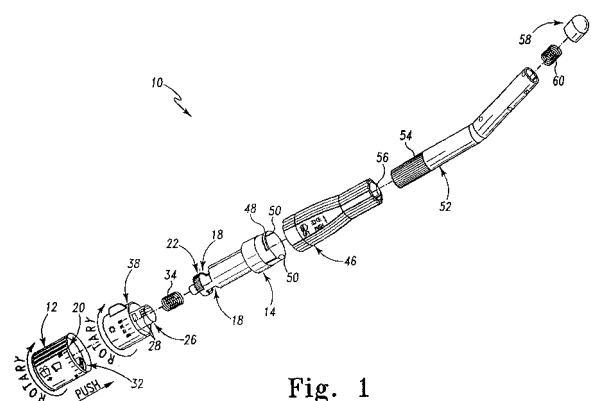


Fig. 1

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EUROPEAN SEARCH REPORT

Application Number
EP 01 12 4540

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 6 020 563 A (RISK JAMES R JR [US] ET AL) 1 February 2000 (2000-02-01)	1-24	INV. B60Q1/14
Y	* the whole document *	25-33	
A	-----	34,35	
Y	US 3 770 926 A (WANNER V) 6 November 1973 (1973-11-06) * figures 2,6 * * column 1, lines 18-32 * * column 4, lines 10-67 *	25-33	
A	----- US 5 660 080 A (RECTOR STEPHEN W [US] ET AL) 26 August 1997 (1997-08-26) * figures 1,3,4 * * column 2, lines 11-40 * * column 3, lines 30-41 *	27	
A	----- DE 299 01 614 U1 (KOSTAL LEOPOLD GMBH & CO KG [DE]) 15 April 1999 (1999-04-15) * figures 1,2 * * page 1 - page 4, line 16 *	27	TECHNICAL FIELDS SEARCHED (IPC)
			H01H B60Q
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 3 November 2006	Examiner Giraud, Pierre
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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03-11-2006

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 6020563	A	01-02-2000	CA	2277630 A1	06-02-2000

US 3770926	A	06-11-1973	CA	971611 A1	22-07-1975
			DE	2337135 A1	07-02-1974
			FR	2195055 A1	01-03-1974

US 5660080	A	26-08-1997	CA	2130637 A1	31-03-1995
			DE	69404253 D1	21-08-1997
			DE	69404253 T2	26-02-1998
			EP	0646737 A1	05-04-1995
			JP	7167268 A	04-07-1995

DE 29901614	U1	15-04-1999	NONE		
